

WHAT IS CLAIMED IS:

1. A nanocomposite optical plastic article, comprising:  
a plastic host material having a temperature sensitive optical vector  $x$ ;  
a core shell nanoparticulate material dispersed into said plastic host material, said core shell nanoparticulate material having a core defined by a nanoparticulate material having a temperature sensitive optical vector  $x_1$ , a shell defined by a coating material layer coated onto said core, said shell having a temperature sensitive optical vector  $x_2$  and wherein said temperature sensitive optical vector  $x_1$  is directionally opposed to said temperature sensitive optical vector  $x$  of said plastic host material.
2. The method recited in claim 1, wherein the steps of providing a nanoparticulate material and coating said nanoparticulate material further include the step of selecting said nanoparticulate material and coating material layer such that said temperature sensitive optical vector  $x$  is defined as an index of refraction  $n_{\text{plastic host}}$ , said temperature sensitive optical vector  $x_1$  is defined as an index of refraction  $n_{\text{core}}$ , and wherein said temperature sensitive optical vector  $x_2$  is defined as an index of refraction  $n_{\text{shell}}$ , wherein  $n_{\text{shell}} < n_{\text{plastic host}} < n_{\text{core}}$ .
3. The method recited in claim 1 wherein said step of dispersing further includes evenly dispersing said core shell nanoparticulate material throughout said polymethylmethacrylate host material.
4. The method recited in claim 1 wherein said step of coating said nanoparticulate material further includes the step of requiring said temperature sensitive optical vector  $x_2$  of said coating material layer to be directionally opposed to said temperature sensitive optical vector  $x$  of said polymethylmethacrylate host material.

5. The method recited in claim 1 wherein said step of providing a nanoparticulate material further comprises the step of selecting a nanoparticulate material from the group consisting of: silica nanoparticles, magnesium oxide nanoparticles, zinc sulfide nanoparticles, zinc selenide, and cadmium sulfide.

6. The method recited in claim 5 wherein said step of selecting a nanoparticulate material further comprises selecting a nanoparticulate material having a particle size of about 15nm.

7. The method recited in claim 5 wherein said step of selecting a nanoparticulate material includes the step of selecting a nanoparticulate material having a particle size less than about 50nm.

8. The method recited in claim 5 wherein said step of selecting a nanoparticulate material includes the step of selecting a nanoparticulate material having a particle size less than about 20 nm.

9. The method recited in claim 1 wherein said step of coating said nanoparticulate material comprises the step of selecting a coating layer from materials comprising any non-absorbing, low refractive index material.

10. The method recited in claim 9 wherein said step of selecting a coating layer further includes the step of selecting a material from the group consisting of: amorphous silica, fluropolymer, magnesium fluoride, and silsequinoxane materials.

11. The method recited in claim 1 wherein said step of coating said nanoparticulate material comprises the step of selecting a coating material layer comprising a silica coating layer.

12. The method recited in claim 11 wherein said step of selecting a coating material layer further comprises the step of applying said coating material layer onto said nanoparticulate material to a thickness in the range of about 5nm to about 17nm.

13. The method recited in claim 1 wherein said step of coating said nanoparticulate material comprises the step of selecting a coating material layer comprising a magnesium fluoride coating layer.

14. The method recited in claim 1 wherein said step of providing a nanoparticulate material further comprises the step of selecting a nanoparticulate material from the group consisting of: potassium titano phosphate, aluminum oxide, magnesium aluminate, yttrium oxide, and calcium carbonate.

15. The method recited in claim 1 wherein the step of dispersing includes the step of compounding.

16. The method recited in claim 1 wherein the step of dispersing includes the steps of:

- (a) dissolving said polymethylmethacrylate host material into a solvent and dispersing said core shell nanoparticulate material into a solvent to form solvent mixtures;
- (b) mixing together said solvent mixtures to form a combined solvent mixture;
- (c) removing the solvent from said combined solvent mixture leaving an optically modified material; and,
- (d) pelletizing said optically modified material.